

FORM PTO-1449

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STATEMENT BY APPLICANT

(Use several sheets if necessary)

ATTY. DOCKET NO.
9138-0060APPLICANT
Doak, et al.FILING DATE
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U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE

FOREIGN PATENT DOCUMENTS

DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION
					YES NO

OTHER DOCUMENTS (Including Author, Title, Date Pertinent Pages, Etc.)

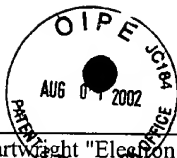
pt	1.	J. W. Orton, C. T. Foxton, "Group III nitride semiconductors for short wavelength light-emitting devices" <i>Reports on Progress in Physics</i> 61, 1 1-75 (1998)
pt	2.	A. Sellidj, B. A. Ferguson, T. J. Mattord, B. G. Streetman, C. B. Mullins, "Growth of GaN on sapphire (0001) using a supersonic yet of plasma-generated atomic nitrogen" <i>Applied Physics Letters</i> 68, 23 3314-3316 (1996)
pt	3.	S. E. Hooper, C. T. Foxton, T. S. Cheng, L. C. Jenkins, D. E. Lacklison, J. W. Orton, T. Bestwick, A. Kean, M. Dawson, G. Duggan, "Some aspects of GaN growth on GaAs (100) substrates using molecular beam epitaxy with an RF activated nitrogen-plasma source" <i>Journal of Crystal Growth</i> 155, 157-163 (1995)
pt	4.	W. C. Hughes, W. H. Rowland Jr., M. A. L. Johnson, S. Fujita, J. W. Cook Jr., J. F. Schetzina, "Molecular beam epitaxy growth and properties of GaN films on GaN/SiC substrates" <i>Journal of Vacuum Science & Technology B</i> 13, 4 1571-1577 (1995)
pt	5.	T. D. Moustakas, "Epitaxial growth of GaN films produced by ECR-assisted MBE" <i>Materials Research Society Symposium Proceedings</i> 395 111-122 (1995)
pt	6.	A. Anders, N. Newman, M. Rubin, M. Dickinson, E. Jones, P. Phatak, A. Gassmann "Hollow-anode plasma source for molecular beam epitaxy of gallium nitride" <i>Review of Scientific Instruments</i> 67, 3 905-907 (1996)



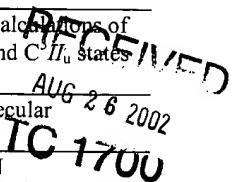
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pl	7.	M. A. G. G. G. G. A. E. Kull, K. Schwender, H. Lee, S. J. Harris Jr., and J. Mroczkowski "Arcjet plasma enhanced vapor phase epitaxy of GaN" <i>Materials Letters</i> 31 161-164 (1997)
pl	9.	F. J. Grunthaner, T. Bicknell-Tassius, P. Deelman, P. J. Grunthaner, C. Bryson, E. Snyder, J. L. Guiliani, J. P. Apruzese, P. Keeple "Ultrahigh vacuum arcjet nitrogen source for selected energy epitaxy of group III nitrides by molecular beam epitaxy" <i>Journal of Vacuum Science & Technology A</i> 16, 3 1615-1620 (1998)
pl	9.	P.C. Engelking, "Corona excited supersonic expansion" <i>Review of Scientific Instruments</i> 57, 9 3375-2277 (1986)
pl	10.	D. Neuerschaefer, Ch. Ottinger, A. Sharma "Observation of a long-lived nitrogen beam afterglow and lifetime measurements on the $N_2(w^3\Delta_u)$ state" <i>Chemical Physics</i> 117 133-148 (1987)
pl	11.	J. Q. Searcy, "A supersonic molecular beam metastable atom source initiated by direct discharge" <i>Review of Scientific Instruments</i> 45, 4 589-590 (1974)
pl	12.	E. L. Leasure, G. R. Mueller, T. Y. Ridley, "'Hot,' metastable atom, molecular beam source" <i>Review of Scientific Instruments</i> 46, 5 635-637 (1975)
pl	13.	D. W. Fahey, L. D. Schearer, W. F. Parks, "igh-flux beam source of fast neutral helium" <i>Review of Scientific Instruments</i> 49, 4 503-506 (1978)
pl	14.	D. W. Fahey, W. F. Parks, L. D. Schearer, "High flux beam source of thermal rare-gas metastable atoms" <i>Journal of Physics E Scientific Instruments</i> 13, 381-383 (1980)
pl	15.	P. C. Engelking "Spectroscopy of jet-cooled ions and radicals" <i>Chemical Reviews</i> 91, 3 399-414 (1991)
pl	16.	K. R. Comer, S. C. Foster, "Infrared spectroscopy of the products of a corona-excited supersonic expansion" <i>Chemical Physics Letters</i> 202, 3,4, 216-220 (1993)
pl	17.	K. P. Huger, M. Vervloet, "High resolution fourier transform spectroscopy of supersonic jets" <i>Journal of Molecular Spectroscopy</i> 153, 1,2 17-25 (1992)
pl	18.	I. Hadj Bachir, T. R. Huet, J. L. Destombes, M. Vervloet, "Laser optogalvanic spectroscopy of N_2 from the $A^3\Sigma_u^+$ metastable state in a corona excited supersonic expansion" <i>Chemical Physics Letters</i> 270, 5,6 533-537 (1997)
pl	19.	D. C. Jordan, R. Barling, R. B. Doak "Refractory graphite skimmers for supersonic free-jet, supersonic arc-jet, and plasma discharge applications" <i>Review of Scientific Instruments</i> 70, 3 1640-1648 (1999)
pl	20.	A. Lofthus, P. H. Krupenie "The spectrum of molecular nitrogen" <i>Journal of Physics Chem. Ref. Data</i> 6, 1 113-139 (1977)
pl	21.	P. B. Armentrout, S. M. Tarr, A. Dori, R. S. Freund, "Electron impact ionization cross section of metastable $N_2(A^3\Sigma_u^+)$ " <i>Journal of Chemical Physics</i> 75, 6 2786-2794 (1981)
pl	22.	P. C. Cosby "Electron-impact dissociation of nitrogen" <i>Journal of Chemical Physics</i> 98, 12 9544-9553 (1993)
pl	23.	G. Cernogora, L. Hochard, M. Touzeau, C. Matos Ferreira "Population of $N_2(A^3\Sigma_u^+)$ metastable states in a pure nitrogen glow discharge" <i>Journal of Physics B: Atomic and Molecular Physics</i> 14, 16 2977-2987 (1981)
pl	24.	J. A. Meyer, D. W. Setser, D. H. Stedman "Energy transfer reactions of $N_2(A^3\Sigma_u^+)$. II. Quenching and emission by oxygen and nitrogen atoms" <i>Journal of Physical Chemistry</i> 74, 10 2238-2240 (1970)



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pk	25.	D. C. Cartwright "Electron impact excitation of the electronic states of N ₂ . II. Integral cross sections at incident energies from 10 to 50 eV ⁺ " <i>Physical Review A General Physics</i> 16, 3 1041-1051 (1977)
pk	26.	H.-Joachim Werner, J. Kalcher, E.-Albrecht Reinsch "Accurate <i>ab initio</i> calculations of radiative transition probabilities between the A ³ Σ _u ⁺ , B ³ Π _g , W ³ Δ _u , B ³ Π _u , and C ³ Π _u states of N ₂ " <i>Journal of Chemical Physics</i> 81, 5 2420-2431 (1984)
pk	27.	W. Benesch "Oscillator strengths for the W ³ Δ _u -X ¹ Σ _g ⁺ band system of molecular nitrogen" <i>Physical Review A General Physics</i> 19, 2 445-451 (1979)
pk	28.	D. C. Jordan, I. S. T. Tsong, D. J. Smith, B. J. Wilkens, R. B. Doak, "III-N semiconductor growth with activates nitrogen: State-specific study of A ³ Σ _u ⁺ metastable N ₂ molecules" <i>Applied Physics Letters</i> 77, 19 3030-3032 (2000)
pk	29.	D. C. Jordan, C. T. Burns, R. B. Doak "Corona discharge supersonic free-jet for III-V nitride growth via A ³ Σ _u ⁺ metastable nitrogen molecules" <i>Journal of Applied Physics</i> 89, 2 883-892 (2001)
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pk	31.	D. C. Jordan, "A Corona Discharge Source for the Growth of III-V Nitrides" <i>Ph.D. Diss.</i>

EXAMINER

P. Haranzadik

DATE 9-12-02
CONSIDERED

EXAMINER: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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